CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

An ISO 9001-2015 Certified Company

NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date: 27.01.2022

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of the work : Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14 in Dasarahalli Assembly Constituency, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	20.01.2022	27.01.2022	8.155	340.1	15.12
2	20.01.2022	27.01.2022	8.175	346.2	15.39
3	20.01.2022	27.01.2022	8.169	352.1	15.65

Note:

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ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಪೂರ್ವ ವಲಯ
ಬೆಂಗಳೂರು-560073.

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date: 17.02.2022

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of the work : Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14 in Dasarahalli Assembly Constituency, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	20.01.2022	17.02.2022	8.175	495.5	22.02
2	20.01.2022	17.02.2022	8.185	499.2	22.19
3	20.01.2022	17.02.2022	8.188	505.6	22.47

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ಬೃಹತ್ ಬೆಂಗಳೂರು ಪಾ.ಪಾ.ಅ.ಕೆ
ಬೆಂಗಳೂರು-560073

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22 Date :21.02.2022

GRADATION FOR WMM

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of Work : Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing :21.02.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	187	187	1.9	98.1	95-100
22.4	2535	2722	27.2	72.8	60-80
11.2	2145	4867	48.7	51.3	40-60
4.75	1845	6712	67.1	32.9	25-40
2.36	1190	7902	79.0	21.0	15-30
0.600	561	8463	84.6	15.4	8-22
0.075	1232	9695	97.0	3.1	0-5

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22 Date :21.02.2022

GRADATION FOR WMM

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of Work Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing :21.02.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grai 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	192	192	1.9	98.1	95-100
22.4	2511	2703	27.0	73.0	60-80
11.2	2148	4851	48.5	51.5	40-60
4.75	1828	6679	66.8	33.2	25-40
2.36	1178	7857	78.6	21.4	15-30
0.600	619	8476	84.8	15.2	8-22
0.075	1233	9709	97.1	2.9	0-5

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ಬಾಗಲಗುಂಟೆ. ಜ.ಜ.ಎಂ.ಪಿ
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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date :21.02.2022

GRADATION FOR WMM

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of Work: Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing :21.02.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	183	183	1.8	98.2	95-100
22.4	2543	2726	27.3	72.7	60-80
11.2	2149	4875	48.8	51.3	40-60
4.75	1843	6718	67.2	32.8	25-40
2.36	1193	7911	79.1	20.9	15-30
0.600	593	8504	85.0	15.0	8-22
0.075	1223	9727	97.3	2.7	0-5

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Date :24.02.2022

Job No.: CACE/BBMP/BMK/W.No.44/2021-22

GRADATION FOR WMM

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of Work : Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads, drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.44in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2386 (Part I):1963(RA 2011)

Date of Testing :24.02.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	191	191	1.9	98.1	95-100
22.4	2522	2713	27.1	72.9	60-80
11.2	2163	4876	48.8	51.2	40-60
4.75	1843	6719	67.2	32.8	25-40
2.36	1175	7894	78.9	21.1	15-30
0.600	622	8516	85.2	14.8	8-22
0.075	1234	9750	97.5	2.5	0-5

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date :24.02.2022

GRADATION FOR WMM

Client : Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.

Agency : Sri B.M. Kiran , Contractor, Bangalore.

Name of Work Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing :24.02.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	196	196	2.0	98.0	95-100
22.4	2546	2742	27.4	72.6	60-80
11.2	2166	4908	49.1	50.9	40-60
4.75	1835	6743	67.4	32.6	25-40
2.36	1169	7912	79.1	20.9	15-30
0.600	626	8538	85.4	14.6	8-22
0.075	1236	9774	97.7	2.3	0-5

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Date: 21.02.2022

Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Aggregate Impact Value

Client	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	Sri B.M. Kiran , Contractor, Bangalore.
Name of the Work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	21.02.2022

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	381	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	294	294	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.63	22.83	22.73

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date: 21.02.2022

Aggregate Impact Value

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri B.M. Kiran , Contractor, Bangalore.**
Name of the Work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	21.02.2022

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	297.5	
4	Aggregate Impact value = percent fines $100^* (W_2/W_1)\%$	22.25	22.73	**22.49**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

Note:

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

Job No:- CACS/ BBMP/ BMK/ W No:14/ 2021-22

Date: 24.12.2022

Aggregate Impact Value

Client	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	Sri B.M. Kiran , Contractor, Bangalore.
Name of the Work	Construction CC drain and other development works at 4th cross construction of road footpath and Bagalagunte 3rd 1/Mn cross roads, railing of Borewells and pipelines at selected area and Construction and repairs UGD at Bagalagunte ward no.14th Dasarahalli Assembly Constituency, BBMP, Bangalore.
IS Code	IS 2386 Part 4:1963 R.A 2016
Type of Mix	Wet Mix macadam
Date of Testing	24.12.2022

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	385	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	84.5	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	295.5	297	
4	Aggregate Impact value = percent fines $100 * W_2 / W_1$ %	22.14	22.43	22.34

Comments:
— Maximum allowable Aggregate Impact value for Wet mix Macadam is 30% As per MORTH Specation table 400.2D

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date : 21.02.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri B.M. Kiran , Contractor, Bangalore.**
Name of Work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	21.02.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	11.90	12.10	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	13.20	13.60	
	Combined Flakiness & Elongation index	25.10	25.70	

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date : 21.02.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri B.M. Kiran , Contractor, Bangalore.**
Name of Work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	21.02.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	12.10	11.90	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	13.20	12.80	
	Combined Flakiness & Elongation index	25.30	24.70	

Note:

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22 Date : 24.02.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri B.M. Kiran , Contractor, Bangalore.**
Name of Work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	24.02.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	11.80	11.60	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	12.40	12.70	
	Combined Flakiness & Elongation index	24.20	24.30	

Note:

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ಬಾಗಲಗುಂಟೆ. ಜಿ.ಕೆ.ಎಂ.ಪಿ
ಬೆಂಗಳೂರು ೫೬೦೦೭೩

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22 Date : 21.02.2022

ATTERBERG LIMITS TEST FOR WMM

Client : Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.

Agency : Sri B.M. Kiran , Contractor, Bangalore.

Name of Work :Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 21.02.2022 to 23.02.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	20.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22 Date : 21.02.2022

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of Work :Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 21.02.2022 to 23.02.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	21.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date : 21.02.2022

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of Work :Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 21.02.2022 to 23.02.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	19.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Ramaiah Layout, Nagasandra, Bangalore - 560 073.
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Job No. CAE/BBMP/BMK/W.No.14/2021-22

Date : 24.02.2022

ATTERBERG LIMITS TEST FOR WMM

Client : Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.

Agency : Sri B.M. Kiran , Contractor, Bangalore.

Name of Work : Construction of drain and other developmnent works at 6th cross construction of road footpath and Bagalagunte 9th, 10th cross roads, drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 24.02.2022 to 26.02.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	22.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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For CIVIL AIM CONSULTANTS & ENGINEERS

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No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618630, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

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JobNo: CACE/BBMP/BMK/W.No.14/2021-22 Date : 21.03.2022

TEST RESULTS OF AGGREGATE SHAPE TEST
(Flakiness & Elongation)

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of work : Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

BIS Code : IS 2386 Part (1):1963

Date of Test : 21.03.2022

Type of Mix : Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	12.60	13.10	25.70	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	12.90	13.40	26.30	

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22 Date: 21.03.2022

Aggregate Gradation Test

Client	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	Sri B.M. Kiran , Contractor, Bangalore.
Name of the Work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads, drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963(RA 2011)
Sample I / D	Hot mix Plant, Bangalore.
Type of Mix	Dense Graded Bitumuous Macadam
Date of Testing	21.03.2022

Total Weight of Sample: 10000 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
26.50	718	7.2	7.18	92.82	90 - 100	
19.00	1255	12.6	19.73	80.27	71 - 95	
13.20	1378	13.8	33.51	66.49	56 - 80	
4.75	2501	25.0	58.52	41.48	38 - 54	
2.36	1318	13.2	71.70	28.30	28 - 42	
0.300	1311	13.1	84.81	15.19	7 - 21	
0.075	1154	11.5	96.35	3.65	2 - 8	

Total Weight of Sample: 10000 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
26.5	686	6.9	6.86	93.14	90 - 100	
19	1420	14.2	21.06	78.94	71 - 95	
13.2	1160	11.6	32.66	67.34	56 - 80	
4.75	2421	24.2	56.87	43.13	38 - 54	
2.360	1161	11.6	68.48	31.52	28 - 42	
0.300	1315	13.2	81.63	18.37	7 - 21	
0.075	1170	11.7	93.33	6.67	2 - 8	

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JobNo: CACE/BBMP/BMK/WNo.14/2021-22 Date : 21.03.2022

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri B.M. Kiran , Contractor, Bangalore.**

Name of work : Construction of C.C.drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads, drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.

Source / Location : Hot Mix Plant, Bangalore

BIS Code : IS 2386 Part (4):1963

Type of Mix : Dense Graded Bituminous Macadam

Date of test : 21.03.2022

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	385	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	88	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	298	298	
5	Aggregate Impact value = percent fines	22.73	23.20	22.96
	100* (W2/W1) percent			

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

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Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

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Job No: CACE/BBMP/BMK/W.No.14/2021-22 Date: 21.03.2022

TEST REPORT ON PAVING BITUMEN

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Sri B.M. Kiran , Contractor, Bangalore.**
Name of work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
BIS Code	IS 73:2013,IS 1203:1978, IS 1208:1978, IS 1205:1978, IS1448(P-69):1969
Date of Testing	**21.03.2022**
Type of Mix	**Dense Graded Bituminous Macadam , VG 30**
Source of Location	**Hot Mix Plant**

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl.No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 0C, 100gms, 5sec, 1/10 mm	49	Min 45
2	Softening point, 0C	52	Min 47
3	Ductility at 250C, cm	>99	Min40
4	Flash Point, 0C	265	Min 220

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22

Date: 23.03.2022

Specific Gravity And Water Absorption Test

Client	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	Sri B.M. Kiran , Contractor, Bangalore.
Name of the Work	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	21.03.2022 to 23.03.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2024	2022	2025	
2	Weight of basket suspended in water	W_2 g	757	758	756	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1267	1264	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2016	2015	2013	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	749	751	744	
6	Weight of oven dried aggregate	W_4 g	2007	2007	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.680	2.672	2.695	2.682
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.712	2.701	2.724	2.713
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.45%	0.40%	0.40%	0.42%

Comments:

→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

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Job No.: CACE/BBMP/BMK/W.No.14/2021-22 Date: 25.03.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Sri B.M. Kiran , Contractor, Bangalore.**
Name of the Work	:	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	25.03.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.26	10.06	9 Kn (min)
2	Marshal flow, mm	3.67	3.75	2 – 4
3	Percent air voids in Mineral Aggregate	13.77	14.30	13 – 15
4	Voids in Compacted Mix	3.80	4.22	3 – 6
5	Percent Voids filled with Bitumen	68.89	69.55	65 - 75
6	Density, g/cc	2.23	2.27	--

Note:

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Job No.: CAC/E/BBMP/BMK/W.No.14/2021-22 Date: 25.03.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Sri B.M. Kiran , Contractor, Bangalore.**
Name of the Work	:	Construction CC drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads, drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	25.03.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.17	9.85	9 Kn (min)
2	Marshal flow, mm	3.78	3.12	2 – 4
3	Percent air voids in Mineral Aggregate	14.25	13.75	13 – 15
4	Voids in Compacted Mix	4.91	4.31	3 – 6
5	Percent Voids filled with Bitumen	71.15	69.62	65 - 75
6	Density, g/cc	2.24	2.23	--

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Job No: CACE/BBMP/BMK/W.No.14/2021-22 Date: 25.03.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX AASHTO T 164 & AASHTO T 30

Client	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
Agency	Sri B.M. Kiran , Contractor, Bangalore.
Name of the Work	Construction C/D drain and other development works at 6th cross construction of road footpath and Bagalagunte 9th 10th cross roads. drilling of Borewells and pipelines at selected area and Construction and repairs UGD in Bagalagunte ward no.14in Dasarahalli Assembly Constituency, BBMP, Bangalore.
Date of Testing	25.03.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	476.5	477.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	23.50	22.50
7. Bitumen content in %	4.70	4.50
8. Average	4.60	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	34.4	34.4	7.2	92.8	90 - 100
19	73.9	108.3	22.7	77.3	71 - 95
13.2	66	174.3	36.6	63.4	56 - 80
4.75	84	258.3	54.2	45.8	38 - 54
2.360	76	334.3	70.2	29.8	28 - 42
0.300	96.8	431.1	90.5	9.5	7 - 21
0.075	21.6	452.7	95.0	5.0	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	36.5	36.5	7.6	92.4	90 - 100
19	73.4	109.9	23.0	77.0	71 - 95
13.2	66.8	176.7	37.0	63.0	56 - 80
4.75	84.50	261.2	54.7	45.3	38 - 54
2.360	78.6	339.8	71.2	28.8	28 - 42
0.300	98.5	438.3	91.8	8.2	7 - 21
0.075	23.4	461.7	96.7	3.3	2 - 8

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples collected at the site.
- Any Query regarding the report must be reported within 30 days from the date of testing

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com